

# Garlic Mustard (*Alliaria petiolata*)



## DESCRIPTION:

This European plant, introduced for food or medicine in the mid 19th century, now threatens woodlands throughout the eastern half of North America. Research has found that garlic mustard releases a chemical called sinigrin into the soil which kills soil fungi. Native plants rely on these same fungi for help extracting nutrients, by removing them the garlic mustard weakens the native plants too. Garlic mustard can rapidly invade and dominate both back yards and high quality natural areas. It forms dense monocultures, displacing and eliminating native plant species and dependent wildlife. Seeds can stay viable in the seed bank for at least 7 years, so it is best to control garlic mustard while they are still few in number. Once a population is found land owners will need to repeatedly check their property for new plants for at least a decade.

Garlic mustard gets its name from the garlic-like smell produced by crushed leaves. The root crown has a distinctive purple color. This biennial species starts in its first year as a small basal rosette less than 6" high with rounded, kidney shaped, yellowish-green leaves with scalloped edges and embossed veins. These rosettes remain green through winter. During spring in its second year the plant bolts, sending up a flowering stalk 2 to 5' high. Second year plant leaves are triangular with more sharply toothed margins. Small, white, four-petaled flowers develop in clusters at the top of the stems by late April to May. By early summer seed capsules form, which burst open to disperse seeds that can then be spread by water, in animal fur, clothing or on the sole of your shoe. After flowering, the plant dies, putting its remaining energy into seed production.

## CONTROL METHODS:

**Organic:** Hand pulling is effective for small populations (few hundred square feet), second year plants pull up easily in moist soil. Care should be taken to minimize soil disturbance. If the plants are flowering or developing seeds they should be bagged and disposed of in the trash to prevent seed dispersal.

For populations that are too large for hand pulling, using a mower or weed whip to *obliterate* the plants late in their flowering period will reduce seed production by roughly 90%. This treatment must be carefully timed for after most of the petals have dropped off of the flowers but before any seed pods swell and mature.

Repeated prescribed burns can reduce the density of this species by killing some of the first year rosettes and impacting the seed bank. Prescribed burns and the clearing of invasive brush and aggressive trees invigorate our native plants which allows them to better compete with the garlic mustard.

**Chemical:** Since the plants remain green year-round, dormant season herbiciding is crucial for controlling large populations of garlic mustard. A foliar application of glyphosate (Round-Up®, etc.) or, where there is a risk of injuring native sedges or grasses, triclopyr (Garlon® 3A) can be sprayed on the first year rosettes in late fall after most native species have gone dormant or in early spring before native species have become active again. The temperature must be above 40 degrees, and the ground not frozen. Herbiciding as plants begin to bolt in the spring may be necessary to control large populations of garlic mustard, with care taken not to harm other plants.

## NATIVE ALTERNATIVES:

Plant or seed native plants into the bare areas left after garlic mustard removal to prevent the establishment of weeds and erosion and to provide resources for wildlife. A few possibilities for shade include spring blooming species such as wild geranium (*Geranium maculatum*), wild columbine (*Aquilegia canadensis*), woodland phlox (*Phlox divaricata*), Virginia bluebells (*Mertensia virginiana*), great white trillium (*Trillium grandiflorum*) and Solomon's seal (*Polygonatum biflorum*); species which add summer color such as tall bellflower (*Campanula americana*), stary campion (*Silene stellata*) doll's eyes (*Actea pachypoda*) and red baneberry (*Actea rubra*); and fall blooming species such as zig-zag goldenrod (*Solidago flexicaulis*), elm-leaved goldenrod (*S. ulmifolia*) and various woodland asters (*Aster* sp.)



Second Year Flowering Plant

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First Year Rosettes

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